عنوان مقاله:

Numerical Study of the Effect of Temperature Changes on the Failure Behavior of Sandwich Panels with Honeycomb Core

نویسندگان:

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خلاصه مقاله:

In this paper, failure modes of sandwich panels are investigated numerically using finite element method. For this purpose, four sandwich beams of GFRP laminate skins and Nomex honeycomb core are considered. The models have been chosen so that they could cover all failure modes according to available experimental failure mode maps. Models are created and analyzed based on standard ۳-points bending test, using ASTM   standard C۳۹۳-۶۲. In order to investigate the effect of loading and sandwich panel parameters on failure behavior, finite element analysis has been utilized. The results are   verified by comparing experimental and theoretical results. The constructed failure mode   map shows dependence of failure mode on the ratio of skin thickness to span length, and honeycomb relative density. To Then, effect of temperature on the failure modes of sandwich panels, has been investigated. Results show that failure modes haven't depended on environment temperature and failure load decreases by increasing environmental temperature. The slope of reduction is a function of beam geometrical parameters. Depending on the parameters, the failure loads decrease between ۱۰% to ۴۰% by increasing environmental temperature.

کلمات کلیدی:

Sandwich panels, Honeycomb core, Failure mode map, Temperature effects